

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

*Division of Commercial Fisheries
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MEMORANDUM

TO:  John Hilsinger, Director
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DATE: September 28, 2010

Charles Swanton, Director 
Division of Sport Fish

THRU: Jeff Regnart, Regional Supervisor
Division of Commercial Fisheries, Region II

SUBJECT: Upper Cook Inlet
Escapement Goal Memo

James Hasbrouck, Regional Supervisor
Division of Sport Fish, Region II

FROM: Lowell Fair, Regional Research Coordinator
Division of Commercial Fisheries, Region II

Jack Erickson, Regional Research Coordinator
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The purpose of this memo is to inform you of the interdivisional salmon escapement goal review committee's progress reviewing and recommending escapement goals for Upper Cook Inlet. Escapement goals in this management area have been set and evaluated at regular intervals since statehood. This effort has resulted in many of the stocks having long-term historical databases. Upper Cook Inlet escapement goals were last reviewed by the department (Fair et al. 2007) during the 2007–2008 Alaska Board of Fisheries (board) cycle. The escapement goal for Yentna River sockeye salmon, however, was reviewed out of cycle in 2009 (Fair et al. 2009). During this review, the sustainable escapement goal (SEG) for Yentna River sockeye salmon was replaced with 2 SEGs represented by Chelatna (20,000–65,000) and Judd (25,000–55,000) lakes. Additionally, an SEG (15,000–50,000) was developed for Larson Lake on the Susitna River mainstem.

In February 2010, an interdivisional salmon escapement goal review committee, including staff from the divisions of Commercial Fisheries and Sport Fish, reviewed existing salmon escapement goals in the Upper Cook Inlet management area. The review was based on the

Policy for the Management of Sustainable Salmon Fisheries (5 AAC 39.222) and the *Policy for Statewide Salmon Escapement Goals* (5 AAC 39.223). Two important terms are:

5 AAC 39.222 (f)(3) “*Biological Escapement Goal* (BEG): the escapement that provides the greatest potential for maximum sustained yield (MSY);” and

5 AAC 39.222 (f)(36) “*Sustainable Escapement Goal* (SEG): a level of escapement, indicated by an index or an escapement estimate, that is known to provide for sustained yield over a 5 to 10 year period, used in situations where a BEG cannot be estimated or managed for.”

The committee determined the appropriate goal type (BEG or SEG) for each salmon stock with an existing goal and considered other monitored, exploited stocks without an existing goal. Based on the quality and quantity of available data, the committee determined the most appropriate methods to evaluate the escapement goals. Due to the thoroughness of previous analyses by Bue and Hasbrouck (*Unpublished*), Clark *et al.* (2007), Hasbrouck and Edmundson (2007), and Fair *et al.* (2007), this review re-analyzed only those goals with recent (2007-2009) data that could potentially result in a substantially different escapement goal from the last review, or those that should be eliminated or established.

Escapement goals were evaluated for Upper Cook Inlet stocks using the following methods: (1) spawner-recruit analyses; (2) yield analyses; (3) smolt/fry information; and/or (4) the percentile approach. Methods used to evaluate the escapement goals and the rationale for making subsequent recommendations will be described in a published report (Fair *et al.* *In prep*) available prior to the February–March, 2011 Upper Cook Inlet board meeting. Following the review, the committee estimated escapement goals for each stock, compared these estimates with the current goal, and agreed on a recommendation to keep the current goal, change the goal, or eliminate the goal.

There were 35 escapement goals (not including Yentna River sockeye salmon) evaluated for 32 stocks in Upper Cook Inlet (Table 1). The committee recommends that most escapement goals remain status quo. However, the committee recommends reinstating the previous Fish Creek coho salmon goal dropped during the 2004–2005 review. The Division of Sport Fish assessed Fish Creek coho salmon escapement with a weir in 2009 and 2010, anticipating that operations will continue in the near future. A risk-based lower bound SEG is proposed to replace the existing SEG range for the Campbell Creek Chinook salmon stock, which provides an annual youth fishery in Anchorage. The Kenai River sockeye salmon SEG range of 500,000–800,000 should change to an SEG range of 700,000–1,200,000, and the Kasilof sockeye salmon SEG of 150,000–250,000 should change to an SEG range of 160,000–360,000. These 2 goal changes are primarily the result of updating historical Bendix sonar escapement data sets with DIDSON-based estimates, and utilizing recent genetic information to develop brood tables. Based on the amount of uncertainty associated with their escapement estimates, the committee recommends changing early and late run Kenai River Chinook salmon BEGs to SEGs. Similarly, uncertainty in Deshka River Chinook salmon commercial harvests prompted a change from a BEG to SEG-type goal. Lastly, returns from 2001–2003 brood years provided sufficient information to develop a BEG (previously an SEG of 14,000–37,000) for early-run Russian River sockeye salmon. This proposed BEG of 22,000–42,000 originated from a Ricker spawner-recruit analysis.

In summary, the escapement goal committee reviewed 34 salmon escapement goals in Upper Cook Inlet with recommendations to: reinstate one previous goal; change one goal from an SEG range to a lower bound SEG; change the ranges of two goals; change three goals from BEGs to SEGs, and; change one goal from an SEG to a BEG and its range.

An oral and written report about Upper Cook Inlet escapement goals and specific recommendations for numerous stocks will be presented to the board in February, 2011. These reports will list all current and recommended escapement goals for Upper Cook Inlet and provide a detailed description of the methods used to reach these recommendations.

Literature Cited

- Bue, B. G. and J. J. Hasbrouck. *Unpublished*. Escapement goal review of salmon stocks of Upper Cook Inlet. Alaska Department of Fish and Game, Report to the Alaska Board of Fisheries, November 2001 (and February 2002). Anchorage.
- Clark, J. H., D. M. Eggers, and J. A. Edmundson. 2007. Escapement goal review for Kenai River late-run sockeye salmon: Report to the Alaska Board of Fisheries, January 2005. Alaska Department of Fish and Game, Special Publication No. 07-12, Anchorage.
- Fair, L. F., R.A. Clark, and J. J. Hasbrouck. 2007. Review of salmon escapement goals in Upper Cook Inlet, Alaska, 2007. November 2007. Alaska Department of Fish and Game, Fishery Manuscript No. 07-06, Anchorage.
- Fair, L. F., T.M. Willette, and J. W. Erickson. 2009. Escapement goal review for Susitna River sockeye salmon. Report to the Alaska Board of Fisheries. January 2009. Alaska Department of Fish and Game, Fishery Manuscript Series No. 09-01, Anchorage.
- Fair, L. F., T.M. Willette, and J. W. Erickson. *In prep*. Review of salmon escapement goals in Upper Cook Inlet, Alaska, 2010. Alaska Department of Fish and Game, Fishery Manuscript Series, Anchorage.
- Hasbrouck, J. J. and J. A. Edmundson. 2007. Escapement goals for salmon stocks in Upper Cook Inlet, Alaska: Report to the Alaska Board of Fisheries, January 2005. Alaska Department of Fish and Game, Special Publication No. 07-10, Anchorage.

Table 1.—Summary of current escapement goals and recommended escapement goals for salmon stocks in Upper Cook Inlet, 2010.

System	Current Escapement Goal			Recommended Escapement Goal			
	Goal	Type	Year Adopted	Range/Lower Bound	Type	Data ^a	Action
Chinook Salmon							
Alexander Creek	2,100–6,000	SEG	2002	2,100–6,000	SEG	SAS	No Change
Campbell Creek	50–700	SEG	2008	380	SEG	SFS	Change to lower bound SEG
Chuitna River	1,200–2,900	SEG	2002	1,200–2,900	SEG	SAS	No Change
Chulitna River	1,800–5,100	SEG	2002	1,800–5,100	SEG	SAS	No Change
Clear (Chunilna) Creek	950–3,400	SEG	2002	950–3,400	SEG	SAS	No Change
Crooked Creek	650–1,700	SEG	2002	650–1,700	SEG	Weir	No Change
Deshka River	13,000–28,000	BEG	2002	13,000–28,000	SEG	Weir	Change to SEG
Goose Creek	250–650	SEG	2002	250–650	SEG	SAS	No Change
Kenai River - Early Run	4,000–9,000	BEG	1999	4,000–9,000	SEG	Sonar	Change to SEG
Kenai River - Late Run	17,800–35,700	BEG	1999	17,800–35,700	SEG	Sonar	Change to SEG
Lake Creek	2,500–7,100	SEG	2002	2,500–7,100	SEG	SAS	No Change
Lewis River	250–800	SEG	2002	250–800	SEG	SAS	No Change
Little Susitna River	900–1,800	SEG	2002	900–1,800	SEG	SAS	No Change
Little Willow Creek	450–1,800	SEG	2002	450–1,800	SEG	SAS	No Change
Montana Creek	1,100–3,100	SEG	2002	1,100–3,100	SEG	SAS	No Change
Peters Creek	1,000–2,600	SEG	2002	1,000–2,600	SEG	SAS	No Change
Prairie Creek	3,100–9,200	SEG	2002	3,100–9,200	SEG	SAS	No Change
Sheep Creek	600–1,200	SEG	2002	600–1,200	SEG	SAS	No Change
Talachulitna River	2,200–5,000	SEG	2002	2,200–5,000	SEG	SAS	No Change
Theodore River	500–1,700	SEG	2002	500–1,700	SEG	SAS	No Change
Willow Creek	1,600–2,800	SEG	2002	1,600–2,800	SEG	SAS	No Change
Chum Salmon							
Clearwater Creek	3,800–8,400	SEG	2002	3,800–8,400	SEG	PAS	No Change
Coho Salmon							
Fish Creek (Knik)				1,200–4,400	SEG	Weir	Reinstate previous SEG
Jim Creek	450–700	SEG	2002	450–700	SEG	SFS	No Change
Little Susitna River	10,100–17,700	SEG	2002	10,100–17,700	SEG	Weir	No Change

Continued

Table 1.—Continued.

System	Current Escapement Goal			Recommended Escapement Goal			
	Goal	Type	Year Adopted	Range/Lower Bound	Escapement Type	Data ^a	Action
Sockeye Salmon							
Chelatna Lake	20,000–65,000	SEG	2009	20,000–65,000	SEG	Weir	No Change
Crescent River	30,000–70,000	BEG	1999	30,000–70,000	BEG	Sonar	No Change
Fish Creek (Knik)	20,000–70,000	SEG	2002	20,000–70,000	SEG	Weir	No Change
Judd Lake	25,000–55,000	SEG	2009	25,000–55,000	SEG	Weir	No Change
Kasilof River	150,000–250,000	BEG	1986	160,000–360,000	BEG	Sonar	Change in Range
Kenai River	500,000–800,000	SEG	1999	700,000–1,200,000	SEG	Sonar	Change in Range
Larson Lake	15,000–50,000	SEG	2009	15,000–50,000	SEG	Weir	No Change
Packers Creek	15,000–30,000	SEG	2008	15,000–30,000	SEG	Weir	No Change
Russian River - Early Run	14,000–37,000	SEG	2002	22,000–42,000	BEG	Weir	Change in Range and to BEG
Russian River - Late Run	30,000–110,000	SEG	2002	30,000–110,000	SEG	Weir	No Change
Yentna River	90,000–160,000	SEG	2002	Eliminated in 2009	Eliminated in 2009		Eliminated in 2009

^a PAS = Peak Aerial Survey, SAS = Single Aerial Survey, and SFS = Single Foot Survey.

cc: Members, Alaska Board of Fisheries.